

Compact, engagable,

One-Way Clutch



NASA seeks companies interested in licensing this clutch technology for commercial use

Researchers at NASA Marshall Space Flight Center (MSFC) have developed a new, one-way roller ramp clutch that provides engagement and disengagement capabilities in a single compact unit. This new shaft coupling capability—the ability to select between no coupling and one-way clutch coupling—enables new applications and reduces the size and cost of power transmission.

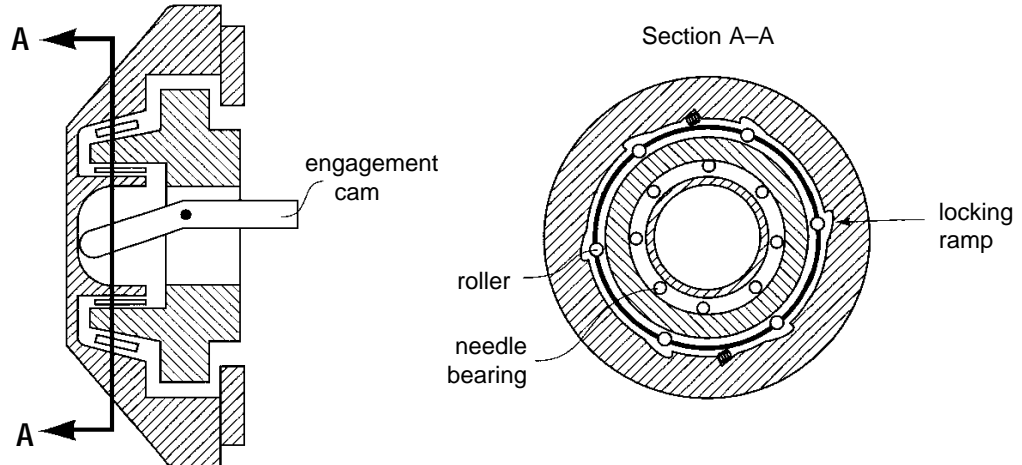
Benefits

- **Enabling**—adds engagement capabilities to one-way clutches
- **Low cost**—each component serves multiple functions, reducing parts count and cost
- **Compact**—all-in-one design requires less space than an equivalent assembly of conventional components
- **Strong**—roller elements provide high torque transmission ability
- **Precise**—integral needle bearings provide accurate clutch alignment
- **Long life**—wedging action of the rollers provides positive locking with very little wear



The Technology

NASA Marshall Space Flight Center developed this technology to provide a one-way clutch that is also releasable. Whereas prior one-way clutches required an additional clutch for disengagement capabilities, Marshall's technology provides a disengagable one-way clutch in a single compact unit.



Commercial Applications

- Lawn mowers, tillers, and chainsaws
- Conveyors
- Winches
- Appliances
- Office equipment

As shown in the drawings above, Marshall's releasable conical roller clutch consists of rollers or sprags positioned between two conical surfaces. These surfaces are aligned with needle bearings, which also allow the conical surfaces to translate relative to each other. This translation can be mechanically controlled with a clutch fork, cam, or other means. When the conical surfaces are sufficiently close, the rollers can contact their respective ramped section of the conical surface to wedge and lock motion. When the clearance between the conical surfaces exceeds the roller diameter, the rollers do not affect the motion and the clutch is disengaged to allow freewheeling.

Commercial Opportunity

This technology (U.S. Patent 6,135,255) is part of NASA's technology transfer program, which seeks to stimulate commercial use of NASA-developed technologies. A patent application has been filed, and Marshall seeks companies interested in licensing it for commercial uses. NASA is flexible in its agreements, and opportunities exist for exclusive, nonexclusive, and exclusive field-of-use licensing.



For More Information

If you would like more information about this technology or about NASA's technology transfer program, please contact:

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More information about working with MSFC's Technology Transfer Department is available online.

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